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| 10/596,217 | 06/05/2006 | Kenneth R. Whight | GB 030217 | 3661 |

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| EXAMINER | |
|---|---|
| ZUBAJLO, JENNIFER L | |
| **ART UNIT** | **PAPER NUMBER** |
| 2629 | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| *Office Action Summary* | **Application No.** | **Applicant(s)** | |
|---|---|---|---|
| | 10/596,217 | WHIGHT, KENNETH R. | |
| | **Examiner** | **Art Unit** | |
| | JENNIFER ZUBAJLO | 2629 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on _05 June 2006_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _1-11_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-11_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _05 June 2006_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because it does not relate to any information in specification. Correction is required. See MPEP § 608.01(b).

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

**Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
 (1) Field of the Invention.
 (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### *Drawings*

3. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ronald S. Cok (Pub. No.: US 2004/0150590 A1).

As to claim 1, Cok teaches a method of correcting video data signals for addressing an active matrix display device, the device comprising a power line arranged

to supply current to n electroluminescent display elements (see fig. 1 and not that it would be obvious for the same method to be supplied to EL display elements because EL displays have the same driving as LEDs or OLEDs), the current supplied to each element being controllable by a respective drive transistor (see [0036]), each drive transistor being addressable by video data signals and having an electrical characteristic parameter X (see [0036] and note that it is well known that tfts have electrical characteristic parameters), the method comprising the steps of: (i)--storing an X value for each drive transistor (see [0036] and note that electrical characteristic parameters are known to tfts, it would be obvious to store these values to use in calculattions for correcting video signals); (ii)--receiving a set of video data signals, each having a value $v_d$ (see fig. 1); (iii)--determining from the stored X values and the received $v_d$ values an expected current through the power line $i_p$ using a model which relates the power line current to the $v_d$ and X values of the drive transistors (see [0036]); (iv)--measuring the current $i_m$ through the power line when the drive transistors are each addressed with the received set of video data signals (see [0011] and [0017]); (v)--calculating the difference g between the expected current $i_p$ and the measured current $i_m$ (see [0026], and fig. 1); (vi)--repeating steps (ii) to (v) for at least n-1 further sets of video data signals (see [0022] and fig. 3); (vii)--calculating an X value for each transistor using the calculated g values (see [0022], [0026], and fig. 1); (viii)--replacing the stored X values with the calculated X values (see [0026] and fig. 3); and (ix)--correcting subsequent video data signals in accordance with the stored X values (see Abstract and [0026]).

As to claim 9, Cok teaches an apparatus for correcting video data signals for addressing an active matrix display device, the device comprising a power line arranged to supply current to n electroluminescent display elements (see [0036] and not that it would be obvious for the same method to be supplied to EL display elements because EL displays have the same driving as LEDs or OLEDs), the current supplied to each element being controllable by a respective drive transistor (see [0036]), each drive transistor being addressable by video data signals each having a value $v_d$ and having an electrical characteristic parameter X (see fig. 1 and note that it is well known that tfts have electrical characteristic parameters), the apparatus comprising means for storing an X value for each drive transistor (see [0022] and fig. 3); means for applying a model to determine an expected current through the power line using the stored X values and video data signal values $v_d$ (see [0021]); means for measuring the current through the power line (see fig. 1 – element 14); means for applying an algorithm to said expected current and said measured current for a plurality of sets of video data signals to determine X values for each drive transistor (see [0026] and fig. 3); correction circuitry for modifying received video data signals in accordance with the stored X values (see [0026] and fig. 1).

As to claim 2, Cok teaches a method according to claim 1 (see above rejection), wherein the method further comprises the steps of: (x)--storing the g values in a column vector G having a length n; and, (xi)--performing an iterative Newton Linearisation

process using vector G to obtain an X value for each transistor (note that performing an iterative Newton Linearisation process is well known in the art and therefore would be obvious to use).

As to claim 3, Cok teaches a method according to claim 2 (see above rejection), wherein said Newton Linearisation process includes the steps of: (xii)--differentiating vector G to obtain an n x n matrix G'; (xiii)--solving the equation: G'(X).deltaX=-G(X) for .deltaX; (xiv)--calculating an updated value for X for each transistor according to .delta.X; (xv)--calculating updated $g_i$ values using the updated X value; and, (xvi)--repeating steps (xii) to (xv) until the g values are within a predetermined range around zero (see fig. 1 and note that the Newton Linearisation process is well known in the art and therefore would be obvious to use).

As to claim 4, Cok teaches a method according to claim 1 (see above rejection), wherein said sets of video data signals have predetermined values $V_d$ to enable successful calculation of said X values in step (vii) (see fig. 1).

As to claim 5, Cok teaches a method according to claim 1 (see above rejection), wherein steps (ii) to (vii) are repeated periodically (see [0024]).

As to claim 6, Cok teaches a method according to claim 1 (see above rejection) carried out in response to the switching on of said display device (see fig. 1).

As to claim 7, Cok teaches a method according to claim 1 (see above rejection), wherein said electrical characteristic parameter X is the threshold voltage $v_t$ of the transistor (note that it is well known in the art for transistors to have threshold voltages as a characteristic parameter).

As to claim 8, Cok teaches a method according claim 7 (see above rejection), wherein said model is based upon the relationship given by the equation: $i_{LED}=K(v_d-v_t)^2$ in which $i_{LED}$ is the current controlled by one drive transistor and K is a constant (note that this is a well known equation and would be obvious to use).

As to claim 10, Cok teaches an integrated circuit chip comprising the apparatus according to claim 9 (see fig 1).

As to claim 11, Cok teaches an active matrix display device comprising a plurality of power lines, each arranged to supply current to a respective plurality of electroluminescent display elements (see [0036] and not that it would be obvious for the same method to be supplied to EL display elements because EL displays have the same driving as LEDs or OLEDs), the current supplied to each element being controllable by a respective drive transistor (see [0036]), each drive transistor being addressable by respective video data signals (see fig. 1), wherein the display device

further comprises apparatus according to claim 9 for correcting video data signals supplied to said transistors associated with each power line (see [0026] and fig. 3).

6. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ronald S. Cok (Pub. No.: US 2006/0077135 A1).

As to claim 1, Cok teaches a method of correcting video data signals for addressing an active matrix display device, the device comprising a power line arranged to supply current to n electroluminescent display elements (see [0037] and not that it would be obvious for the same method to be supplied to EL display elements because EL displays have the same driving as LEDs or OLEDs), the current supplied to each element being controllable by a respective drive transistor (see [0037] and [0063]), each drive transistor being addressable by video data signals and having an electrical characteristic parameter X (see [0037] and [0063] and note that it is well known that tfts have electrical characteristic parameters), the method comprising the steps of: (i)--storing an X value for each drive transistor (see [0037] and note that electrical characteristic parameters are known to tfts, it would be obvious to store these values to use in calculattions for correcting video signals); (ii)--receiving a set of video data signals, each having a value $v_d$ (see fig. 4 – image signals 18); (iii)--determining from the stored X values and the received $v_d$ values an expected current through the power line $i_p$ using a model which relates the power line current to the $v_d$ and X values of the drive transistors (see [0037]); (iv)--measuring the current $i_m$ through the power line when

the drive transistors are each addressed with the received set of video data signals (see [0037] and [0046]); (v)--calculating the difference g between the expected current $i_p$ and the measured current $i_m$ (see [0035], [0046], and fig. 4); (vi)--repeating steps (ii) to (v) for at least n-1 further sets of video data signals (see [0046]); (vii)--calculating an X value for each transistor using the calculated g values (see [0035], [0046], and fig. 4); (viii)--replacing the stored X values with the calculated X values (see [0046]); and (ix)--correcting subsequent video data signals in accordance with the stored X values (see Abstract and fig. 4).

As to claim 9, Cok teaches an apparatus for correcting video data signals for addressing an active matrix display device, the device comprising a power line arranged to supply current to n electroluminescent display elements (see [0037] and not that it would be obvious for the same method to be supplied to EL display elements because EL displays have the same driving as LEDs or OLEDs), the current supplied to each element being controllable by a respective drive transistor (see [0037] and [0063]), each drive transistor being addressable by video data signals each having a value $v_d$ and having an electrical characteristic parameter X (see [0037] and [0063] and note that it is well known that tfts have electrical characteristic parameters), the apparatus comprising means for storing an X value for each drive transistor (see [0028] and [0046]); means for applying a model to determine an expected current through the power line using the stored X values and video data signal values $v_d$ (see [0046] and note that it would be obvious that the lookup table information was obtained from a model); means for

measuring the current through the power line (see [0027]); means for applying an algorithm to said expected current and said measured current for a plurality of sets of video data signals to determine X values for each drive transistor (see [0046] and fig. 4); correction circuitry for modifying received video data signals in accordance with the stored X values (see [0046] and fig. 4).

As to claim 2, Cok teaches a method according to claim 1 (see above rejection), wherein the method further comprises the steps of: (x)--storing the g values in a column vector G having a length n; and, (xi)--performing an iterative Newton Linearisation process using vector G to obtain an X value for each transistor (note that performing an iterative Newton Linearisation process is well known in the art and therefore would be obvious to use).

As to claim 3, Cok teaches a method according to claim 2 (see above rejection), wherein said Newton Linearisation process includes the steps of: (xii)--differentiating vector G to obtain an n x n matrix G'; (xiii)--solving the equation: G'(X).deltaX=-G(X) for .deltaX; (xiv)--calculating an updated value for X for each transistor according to .delta.X; (xv)--calculating updated $g_i$ values using the updated X value; and, (xvi)--repeating steps (xii) to (xv) until the g values are within a predetermined range around zero (see fig. 4 and note that the Newton Linearisation process is well known in the art and therefore would be obvious to use).

As to claim 4, Cok teaches a method according to claim 1 (see above rejection), wherein said sets of video data signals have predetermined values $V_d$ to enable successful calculation of said X values in step (vii) (see fig. 4 – image signals 18).

As to claim 5, Cok teaches a method according to claim 1 (see above rejection), wherein steps (ii) to (vii) are repeated periodically (see [0046]).

As to claim 6, Cok teaches a method according to claim 1 (see above rejection) carried out in response to the switching on of said display device (see fig. 4).

As to claim 7, Cok teaches a method according to claim 1 (see above rejection), wherein said electrical characteristic parameter X is the threshold voltage $v_t$ of the transistor (note that it is well known in the art for transistors to have threshold voltages as a characteristic parameter).

As to claim 8, Cok teaches a method according claim 7 (see above rejection), wherein said model is based upon the relationship given by the equation: $i_{LED}=K(v_d-v_t)$^2 in which $i_{LED}$ is the current controlled by one drive transistor and K is a constant (note that this is a well known equation and would be obvious to use).

As to claim 10, Cok teaches an integrated circuit chip comprising the apparatus according to claim 9 (see fig 4).

As to claim 11, Cok teaches an active matrix display device comprising a plurality of power lines, each arranged to supply current to a respective plurality of electroluminescent display elements (see [0037] and not that it would be obvious for the same method to be supplied to EL display elements because EL displays have the same driving as LEDs or OLEDs), the current supplied to each element being controllable by a respective drive transistor (see [0037] and [0063]), each drive transistor being addressable by respective video data signals (see fig. 4 – image signals 18), wherein the display device further comprises apparatus according to claim 9 for correcting video data signals supplied to said transistors associated with each power line (see [0046] and fig. 4).

## *Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pub. No: US 2006/0087588.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER ZUBAJLO whose telephone number is (571)270-1551. The examiner can normally be reached on Monday-Friday, 8 am - 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer Zubajlo/
Examiner, Art Unit 2629
12/18/09

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629